

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

*In re* Application of: Atty. Docket:  
Pingali *et al.* YOR920030551US1  
Serial No.: 10/735,053 Art Unit: 2851  
Filed: December 12, 2003 Examiner: Sever, Andrew T.  
Customer No.: 29683 Confirmation No.: 2500  
Title: A System and Method for Positioning Projectors in Space to Steer Projections and Afford Interaction

**APPELLANTS' SUPPLEMENTAL REPLY BRIEF**

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is in reply to the Supplemental Examiner's Answer dated June 7, 2007 (hereinafter "the Supplemental Answer").

Appellants reply to Examiner's first argument set forth at pages 3 – 4 of the Supplemental Answer. First, at page 3, the Examiner alleges that Appellants have raised two "new" issues in their Reply Brief. With all due respect, it is improper to characterize arguments presented by Appellants to rebut the misleading and often contradictory arguments of the Examiner as "new".

Regarding the Examiner's argument at pages 3 – 4, Appellants reiterate that the Examiner has adopted an improper claim construction. The independent claims of the case are directed to, in part, "a projecting system comprising ... a projector for projecting a distorted image" (claim 1). Appellants describe at length that in their invention an undistorted image is distorted prior to projection and then projected. Hence, part of claim 1 is appropriately directed to "a projector for projecting a distorted image".

Appellants argue that projection of an undistorted image that becomes distorted through interaction with a surface (as in the case of the Miyamoto reference) does not meet this limitation. The Examiner admits that Miyamoto does not teach projection of a distorted image (only projection of an image that becomes distorted through interaction with a curved surface) when the Examiner relies on the Raskar reference to conclude that an image projected in the manner of Miyamoto would become distorted because it is being projected on a curved surface. This is the only sense in which the Examiner relies upon the Raskar reference regarding this limitation. *i.e.*, an otherwise undistorted image would become distorted when projected on a curved surface.

In other words, if a "projector for projecting a distorted image" as recited in claim 1 is given the construction argued for by Appellants, then the fact that projection of an otherwise undistorted image becomes distorted as in the combination of Miyamoto and Raskar argued for by Examiner would be irrelevant. In addition, since the Examiner admits at length that the subject matter of Raskar having to do with distorting an image

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prior to projection is *not* relied upon for meeting this limitation of claim 1, Examiner cannot set forth a case of anticipation for claim 1 since none of the art of record relied upon by the Examiner teach the limitation of a “projector for projecting a distorted image”. Neither Miyamoto nor Connelly either teach or suggest distorting an image prior to projection, and the Examiner does not rely on the Raskar reference for meeting this limitation.

Despite the Examiner’s protestations that Raskar *not* be relied upon for meeting this limitation (regarding pre-projection distortion of an image), if Raskar were to be relied upon, then Appellants should prevail since the Examiner has never responded to Appellants’ arguments presented in this regard. Instead, the Examiner has assumed that the effective claim construction advocated in his arguments would be adopted. Appellants argue that one of ordinary skill in the art would consider the combination of the teaching of Raskar having to do with correction of image distortion and Miyamoto so impractical that it would never be attempted. As Examiner has never answered this argument, if Appellants’ claim construction is adopted, Appellants should prevail for this reason alone.

Next, Appellants take up the Examiner’s answering arguments starting at page 5 of the Supplemental Answer. Appellants nowhere admitted that Connelly operates in the manner set forth by the Examiner. In fact, it is quite clear what the Appellants argued and the Examiner’s claim that Appellants admitted anything is a gross

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mischaracterization of the arguments presented in Appellants' Reply Brief. That this is the case will become clear in the following discussion.

The Examiner at page 5 of the Supplemental Answer states the following:

"Appellant raises a second new issue starting on page 8 of the reply brief: that Connelly addresses a problem different from Appellant's invention and is therefore non-analogous art. Specifically appellant argues that Connelly is directed to (easily) moving a projector or projectors to a projection position where as acknowledged by appellant on page 8 they can project on the 'sweet spot' (which as acknowledge by appellant on page 13 of the reply brief result in a image that appears undistorted [to a viewer]). Appellant states on page 8 third full paragraph: 'it cannot be said that the movement of the projectors from a storage position to the projection position is performed to correct distortion.' However this is contradicted by appellant's own characterization above it in the first and second paragraph of page 8 of the reply brief that the Connelly reference overcomes the problem of the off-axis projectors by moving the projectors to the sweet spot in order to correct for distortion (as viewed by a viewer of the image) that would occur if they were not moved. Accordingly as acknowledged by the appellant in the first and second full paragraphs of page 8 of the reply brief, Connelly is teaching that by moving projectors with translational movement (as opposed to rotational which is taught by Miyamoto), the projector can be moved so that a viewer would see an undistorted image on the surface of the object projected upon."

Appellants respectfully counsel the Examiner to spend more time considering what the references actually teach rather than mischaracterizing Appellants' arguments. Appellants' arguments simply do not support Examiner's arguments set forth above.

As discussed above, the claims concern, in part, projection of a purposefully distorted image that is rendered undistorted when displayed on a surface through movements of the projecting apparatus. In other words, adjusting movements of the projecting apparatus create an undistorted image from a distorted image.

In view of this, and to make comparison of what the Appellants actually argued, with what the Examiner claims Appellants argued easier, Appellants reproduce their arguments from the Reply Brief here (emphasis in bold added):

“Regarding the Examiner’s mischaracterization of the references, Connelly is concerned with a different problem from Appellants’ invention. In some image projection situations of concern to Connelly multiple projectors are used, for example, to alternately create images on the same area of the display. Due to the impracticality of moving heavy projectors during projection operations, the projectors are conventionally toed-in, meaning that they are not positioned along the centerline of the display. Such positioning of the projectors results in keystone distortion, whereby one side of a displayed image is higher than the other side.

**Connelly attempts to solve this problem by providing a relatively simple solution that totally avoids creating a projected image that requires distortion correction. In Connelly’s apparatus, projectors are mounted on rails and moved back and forth between storage positions and a projection position. In such an arrangement,**

**the projectors need not be toed-in with respect to the axis of the display and can share the sweet spot (although not simultaneously), and no distorted image need be projected.**

*It cannot be said that the movement of the projectors from a storage position to the projection position is performed to correct distortion. The projectors when positioned at the storage position are not toed in, nor are they arranged to project anything. It is only in the single projection position that the projectors project anything. Once in the projection position, they are not moved during projection operations. In fact, the most accurate way to describe the teachings of Connelly is that they avoid the need for distortion correction by alternately switching individual projectors of a bank of projectors into a so-called ‘sweet spot’ where distortion is not an issue. Once in the sweet spot, there is no suggestion that the moving rails can be used to correct any residual distortion. In other words, the teachings of Connelly seek to avoid the need for correcting distortion by moving projectors to a position where it is known that distortion will not be an issue. This is totally different from Appellants’ invention as claimed which seeks to display an undistorted image by projecting a distorted image and adjusting the positioning of the projector so that the undistorted image results.”*

Appellants respectfully submit that what the Appellants actually argued in their reply brief, and what the Examiner claimed they argued (and admitted) have little, if anything, in common. In particular, Appellants made the point that in the arrangement of Connelly there is no distortion that needs to be corrected since the projectors always are positioned to project from the “sweet spot”. The movement from the storage position has nothing to

do with distortion correction because the projectors in the arrangement of Connelly are not intended to project from anywhere else besides the “sweet spot”.

What the Examiner is really doing in his misleading arguments is conflating the conventional projector arrangement of the prior art described in Connelly with Connelly’s arrangement. The problem with this approach is that Connelly’s arrangement departs totally from the conventional arrangement of the prior art. The projectors in Connelly’s arrangement never assume the toed-in arrangement of the conventional prior art projector arrangement. In addition, the translational movement from the storage position of Connelly’s arrangement is *not* used to remedy the keystone distortion since keystone distortion never occurs in Connelly’s arrangement.

Further, as a practical manner, it is nonsensical to speak of Connelly’s arrangement as being included in a combination like that suggested by the Examiner. There is no need to project a distorted image in Connelly’s arrangement since projection of a distorted image would result in another distorted image when displayed. In other words, it is inherent (and would be well-known to one skilled in the art) that the image being projected in Connelly’s arrangement is not distorted and should never be distorted if a user wants to achieve an undistorted image.

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### Conclusion

For at least the above reasons, the Appellants contend that all of the independent claims 1, 24, 30 – 35, 37 and 40 are patentable over any of the art of record, whether taken singly or in combination so Appellants request that the rejection of these claims be withdrawn. As all of claims 2 – 13, 15 – 23, 25 – 29, 36 and 38 – 39 are dependent upon claims 1, 24, 35 and 37, they are likewise patentable for at least this reason and the rejection of these claims should likewise be withdrawn. The Appellants respectfully request that the Board reverse the final rejection of the claims in the Office Action of December 29, 2006, and further that the Board rule that the pending claims are patentable over the cited art.

Respectfully submitted,

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